

TERMS OF SALE:

1. Professional, Vanguard and Troubador Theremins: Any of these instruments may be purchased through your musical instrument dealer, or directly from the R. A. Moog Co. Our terms of sale are cash with your order. Allow 2 to 3 weeks for delivery. We pay all packing and shipping charges to any destination in North America.

2. Assembled Melodia Theremin, Melodia Theremin Kit, Theremin Components Kit, XP-2 and XP-2B Amplifier Components Kit:

These are sold directly by the R. A. Moog Co. and are kept in stock for immediate shipment. Terms of sale are cash with your order, F.O.B. Trumansburg, N. Y. Postage and insurance depends upon your distance from Trumansburg, and is tabulated below:

Item	SHIPPING WT.	DISTANCE FROM TRUMANSBURG, N. Y.						
		Up to 150 miles	150-300 miles	300-600 miles	600-1000 miles	1000-1400 miles	1400-1800 miles	1800+ miles
Assembled Melodia Theremin (MA)	13 lbs.	1.18	1.32	1.53	1.89	2.22	2.64	3.03
Melodia Theremin Kit (MT)	11 lbs.	1.03	1.15	1.33	1.63	1.93	2.29	2.63
Theremin Components Kit (TC)	3 lbs.	.56	.59	.65	.74	.83	.93	1.03
Amplifier Components Kit XP-2	14 lbs.	1.28	1.43	1.66	2.04	2.39	2.85	3.26
Amplifier Components Kit XP-2B	20 lbs.	1.67	1.89	2.21	2.75	3.20	3.86	4.41

Air Parcel Post costs about four times as much as regular Parcel Post, but saves up to one week of shipping time to distant points.

Please send sufficient funds to cover postage and insurance. We will promptly refund in case of overpayment.

3. PMS-15 and PMS-15B Amplifiers and Amplifier Kits: These are sold directly by the R. A. Moog Co. Terms of sale are cash with your order. Shipment is made from stock via REA Express. Express charges will be collected at the time of delivery. (Other transportation arrangements can be made if necessary.)

catalog of
MOOG
ELECTRONIC
MUSIC
EQUIPMENT



R. A. Moog Company

Trumansburg, New York ■ Phone 607/387-9200



R. A. Moog Company





A NEW
CONCEPT IN
MUSICAL
ENJOYMENT
—THE MOOG
PMS-15
self-powered,
integrated
amplifier-speaker



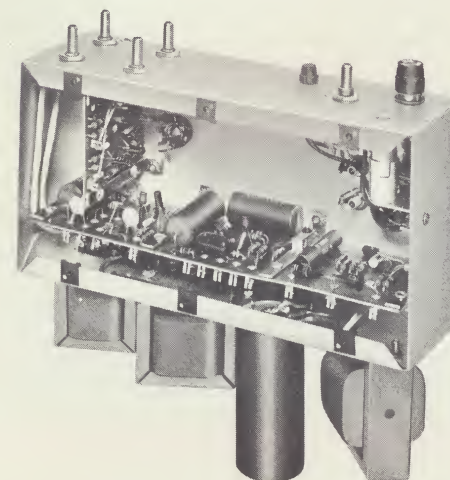
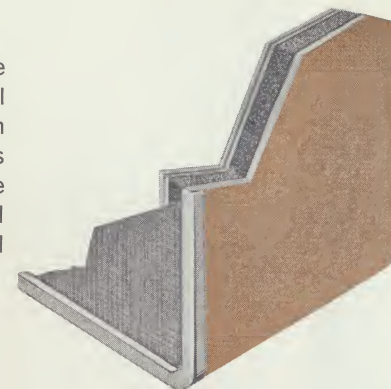
A lightweight, rugged cabinet, advanced-design amplifier, JBL speaker and rechargeable battery set a new standard for versatility in the smartly styled new Moog PMS-15.

Plugged into a standard wall outlet or operating from its own long-lasting rechargeable battery, the PMS-15 gives you true high fidelity reproduction. Just plug in the output of any portable radio, battery-operated tape recorder or phonograph, microphone or musical instrument. Use it at home for a basic unit in your music system, take it into the back yard for patio parties and barbeques, to the beach or remote vacation spots, wherever you go.

A PMS-15 is a hard worker, too. Here is the first truly portable system to meet the exacting standards of the professional entertainer and the technician. Two low-noise inputs accommodate microphone and instrument or other combinations to give the entertainer the broadest possible capability wherever his audience is gathered. The PMS-15's rechargeable battery delivers power enough for up to several days of operation without recharging. Weighing only half as much as some professional monitoring amplifiers, the PMS-15 enables the technician to amplify any audio signal, regardless of location and independent of the power line.

ENCLOSURE

This cutaway view shows the sandwich type construction of the enclosure. The outer shell is molded Royalite®, tough and resilient, with the look and feel of leather. Acoustical stiffness and insulation comes from the foamed-in-place rigid polyurethane core. Inner shell is a special thin plywood which optimizes the acoustical properties of the cabinet.



AMPLIFIER

Solid state amplifier is conservatively rated at 15 watts output power. The circuitry includes two independent low-noise inputs, bass and treble controls, high-efficiency power stage, regulated power supply and battery charger. The amplifier circuitry includes thirteen transistors and five diodes.

SPEAKER

The PMS-15 uses a James B. Lansing Model D-216 speaker. One of the finest eight-inch speakers available, the D-216 was chosen because of its large power-handling capability, wide range, low distortion and high efficiency.

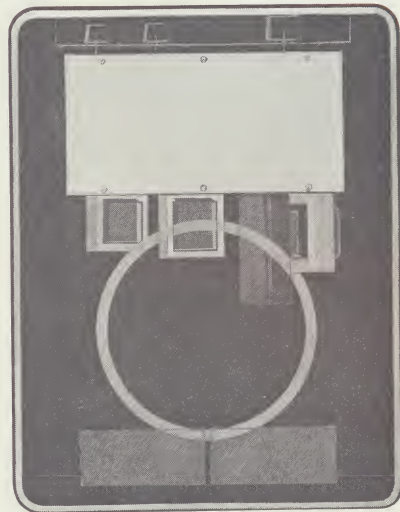


BATTERY

The heavy-duty rechargeable battery used in the PMS-15 gives you up to 30 hours of playing time, depending on the type and loudness of program material. Useful life is several years, or 100-200 discharge cycles in heavy use. Leakproof and explosion proof, this battery cannot be damaged by excessively heavy discharging. Recharge it overnight through the charging circuit on the amplifier chassis.



PMS-15 SPECIFICATIONS



This cutaway view shows relationship of the components within the PMS-15.

Output power of amplifier..	15 watts
Total harmonic distortion at full output	Less than 2%
Frequency response of amplifier	± 1 db 30 cps-20KC
Operating time between battery charging	From 5 to 30 hours depending on pro- gram material. Aver- age is 15 hours.
Power sources required	Either: 117 volts 60 cycle AC or: 12 volts DC or: internal 12 volt battery
Time for complete battery charge cycle	Less than 12 hours
Sensitivity of input (two independent inputs)	20 millivolts
Signal-to-noise ratio: for input signal of 100 millivolts	Better than 70 db
Total weight	20 lbs. without battery 26 lbs. with battery
Overall size	17 $\frac{3}{4}$ " high 14 $\frac{1}{4}$ " wide 9" deep

How to order the PMS-15

For detailed ordering information, see back cover.

PMS-15 KIT

Assemble your own PMS-15 with clear, step-by-step instructions for assembling amplifier chassis and installing components in the factory built cabinet. All parts and instructions are included.		\$129.95
PMS-15	Factory assembled	\$199.95
PMS-15B Kit	Same as above with battery	\$174.95
PMS-15B	Factory assembled with battery	\$244.95

XP-2 KIT

For Science Fair contestants, experimenters, advanced constructors. Kit contains all electronic components and textbook-style instruction booklet. Every circuit feature discussed in detail. Gives all data necessary to design and build cabinet, chassis and wire circuit boards. Suggests circuit additions and modifications.

\$ 89.50

XP-2B Kit with battery **\$134.50**

See terms and shipping information on back page.

THE MOOG THEREMIN

Music's most contemporary instrument



The unique electronic tones of the Theremin, sounding at times like a cello, at others more ethereal than any conventional musical instrument, are controlled by the movements of the performer's hands in the space surrounding the instrument. There are no buttons or keys to determine pitch or tone intensity . . . the Thereminist exercises fully as much control over tone production as does a singer over his voice.

With the right hand, the Thereminist commands an unusually versatile pitch range of as much as five octaves. To raise the pitch, the hand is brought closer to the slender vertical rod extending from the top of the instrument. Moving the hand away from the antenna lowers the pitch. Glissando, vibrato and other effects can be easily achieved once proper technique is learned. Loudness of tone is controlled with the left hand. The player brings his left hand nearer to the volume antenna to soften the tone, moves it away to make the note louder. These are the only movements involved in playing the Theremin. As with any musical instrument, some practice is required, but the fundamentals are not difficult to master.

The Theremin was introduced into this country in 1928 by its inventor, Leon Theremin. It gained quick acceptance in musical circles and for many years has been a favorite of contemporary composers and professional musicians. Played extensively on the concert stage and in theme music for motion picture and television productions for many years, the Theremin is now finding its way into thousands of homes where it contributes to family fun and enjoyment of music.



FOUR MOOG THEREMINS

For home entertainment, professional use, for hi-fi enthusiasts and experimenters . . . There's a MOOG THEREMIN just right for you!

CIRCUITRY OF THE MOOG THEREMIN

Every Moog Theremin is fully transistorized and designed for years of trouble-free use. The instrument utilizes hand capacitance to control both pitch and volume. The pitch control section consists of a beat frequency oscillator, whose frequency is changed by the addition of hand capacitance to the pitch antenna. The volume control section utilizes a third R. F. oscillator, whose output is rectified and used to bias a control amplifier. Addition of hand capacitance to the volume antenna varies the output of the oscillator, and hence the gain of the amplifier.

THE MELODIA



The Melodia is a Moog Theremin in kit form. Retaining all of the essential characteristics of the standard Theremin, the Melodia can be assembled with a few hand tools. Step-by-step instructions, easy to follow and fully illustrated, make building your own Theremin fun. Tips on playing your Melodia are included, too. All parts are of premium grade. The chassis and panel are pre-formed and punched. The hand-crafted natural walnut cabinet is designed to mount on a microphone stand.

The Melodia has a five-octave range, extending from two octaves below to three octaves above Middle C. Build it, plug it into an audio amplifier, and enjoy the creative challenge of the Theremin.

SPECIFICATIONS:

Power requirements 6 volts at 10 milliamperes (one 6-volt battery)

Transistors 4 2N414

Useful pitch range 60—2,000 cycles

Max. R.M.S. output 0.5 volts, medium impedance

Cabinet dimensions 22¼" x 6" x 3⅛"

Weight 8 pounds

Melodia Model Theremin Kit MT. Shipping weight — 11 pounds **\$49.95**

Melodia Model Theremin Assembled MA. Completely assembled and adjusted at the factory, this model needs only an amplifier, loudspeaker and microphone stand. Shipping weight — 13 pounds **\$75.00**

Theremin Components Kit TC. Contains all components needed to build the Melodia Theremin, except chassis, panel and antennas. Ideal for advanced experimenters, students, Science Fair contestants. Shipping weight — 3 pounds. **\$29.95**

THE TROUBADOR



A professional adaptation of the Melodia, the Troubador has a 115 volt AC power supply instead of a battery, special shielding so the instrument may be placed on any table to be played, improved tuning adjustments, and a continuously adjustable timbre control.

Troubador Model Theremin (assembled only)
Shipping weight — 17 pounds **\$160.00**

See terms and shipping information on back page.

10th ANNIVERSARY 1954-1964



A WORD ABOUT THE R. A. MOOG COMPANY

The application of electronic technology to music represents a broad area of creative opportunity, an area in which the R. A. Moog Company has been actively working for the past 10 years.

Since we developed and began producing the modern version of Leon Theremin's original design, improvements in technology have enabled us to expand our line of products to include four Theremin models and the new PMS-15 self-powered amplifier-speaker.

Now, on our 10th anniversary, we are engaged in the development of new types of electronic musical instruments. Our customers will be pleased to know that several new instruments, original in concept and design, are now under test and some will be available in 1965.

Our goal, during the coming years, is to maintain the high quality and dependability of our products, and to meet the needs of our customers, both amateur and professional, with new and dramatic products for the production of electronic music.

THE VANGUARD



All components of the Vanguard, including the loudspeaker, are housed in a handsome, hand-rubbed solid mahogany cabinet. The tuning adjustments are conveniently located in front of the player as he faces the instrument.

The pitch range covers three and one-half octaves, extending from an octave below Middle C to two and one-half octaves above Middle C.

The cabinet is 20" high, 18" wide and 12" deep at the base, and is designed to stand on a table 20 to 22" high. The Vanguard is ready to play moments after you receive it. Merely insert the anodized aluminum antennas, plug in the power cord and turn the instrument on. Tuning the instrument takes only seconds. Because its design combines simplicity and reliability of operation, the Vanguard requires little maintenance. Periodic service inspection every two or three years is sufficient. This inherent dependability of the Vanguard is a prime requisite for a true musical instrument.

Vanguard Model Theremin **\$395.00**

THE PROFESSIONAL

Truly the finest Theremin made, the Professional is designed to meet every need of the accomplished Thereminist. In addition to all the features of the Vanguard, the Professional allows selection of four timbres or tone colors — Principal, Horn, Woodwind and String. These are not imitative tones, but indicate the general quality of the tones available. The Principal tone is mellow and flutelike — the traditional sound of the Theremin. The Horn tone is sharp and nasal, like that of an oboe. The Woodwind tone is hollow and woody, like a clarinet. The String tone carries the rich overtones of a stringed instrument. Timbre is controlled by a switch on the front panel and may be changed to provide contrasting tonal voices within a piece of music. A special speaker assures the fidelity of each tone color.

The total pitch range of the Professional is four and one-half octaves, with the Principal and Horn tones extending from one-half octave below Middle C to three octaves above Middle C and the Woodwind and String tones extending from one and one-half octaves below Middle C to two octaves above Middle C.

The cabinet is 20" high, 18" wide and 10" deep. The instrument is designed for a table 20 to 22" high.

The Professional Model Theremin is an instrument of the highest quality, advanced in design as far as the state of the art of electronic instrument manufacture permits. It complements the talents of the most gifted Thereminists and holds a foremost place among modern musical instruments.

Professional Model Theremin **\$650.00**



ORDER BLANK

TO:

**R. A. Moog Company
Trumansburg, N. Y. 14886**

FROM:

Name _____
(please print or type)

Address _____

City _____ State _____

Shipping address if different than above:

QUANTITY	DESCRIPTION	PRICE EACH	TOTAL
_____	PMS-15 Kit	\$129.95	_____
_____	PMS-15 Assembled	199.95	_____
_____	PMS-15B Kit (with battery)	174.95	_____
_____	PMS-15B Assembled (with battery)	244.95	_____
_____	XP-2 Kit	89.50	_____
_____	XP-2B Kit (with battery)	134.50	_____
_____	Melodia Kit MT	49.50	_____
_____	Melodia Assembled MA	75.00	_____
_____	Theremin Components Kit TC	29.95	_____
_____	Troubador Theremin Assembled only	160.00	_____
_____	Vanguard Theremin	395.00	_____
_____	Professional Theremin	650.00	_____

Please ship by:

☐ Parcel Post Total Order _____
☐ Air Parcel Post Amount for Shipping _____
☐ Other _____ Total Enclosed _____

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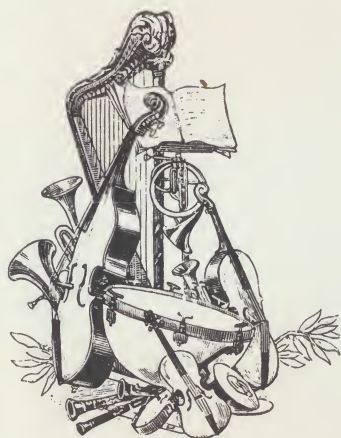


R. A. Moog Company

Trumansburg, New York ■ Phone 607/387-9200

10TH Anniversary Issue Fall/Winter 1964

MOOG MUSIC



R. A. Moog Company
Trumansburg, New York

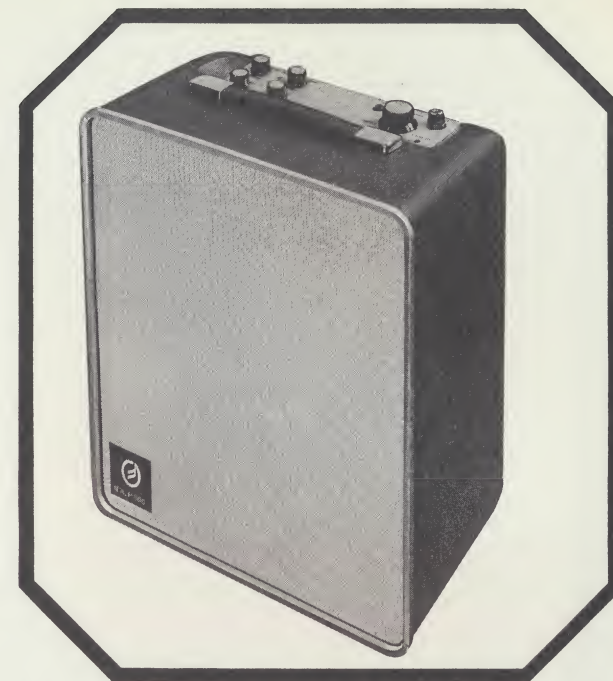
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NEW INTEGRATED AMPLIFIER-LOUDSPEAKER PROVIDES HIGH-FIDELITY REPRODUCTION WITH COMPLETE PORTABILITY

Careful integration of solid state circuitry, wide-range loudspeaker of high efficiency, rechargeable battery, and lightweight enclosure, characterize the model PMS-15 amplifier-loudspeaker combination.

The PMS-15 is an integrated amplifier-loudspeaker capable of clean, accurate reproduction, yet completely portable and self-powered. When combined with signal sources such as portable radios, tape recorders, phonographs, microphones, and musical instrument pickups, the PMS-15 becomes a truly universal music system. For home use, the PMS-15 can be connected and operated as a conventional hi-fi system. Its brown leather-like case fits into any decor. The instrument may be set against a wall or on a shelf so that its controls are readily accessible, but power and signal cords are out of sight. By simply disconnecting the power cord, the instrument is ready for high fidelity reproduction wherever it is taken. For musicians, the PMS-15 is an ideal instrument amplifier. The performing musician is no longer restricted by an amplifier power cord. For professional entertainers, the PMS-15 combines all the advantages of a portable public address system with those of a high fidelity amplifier. For people who travel, here is an amplifier-loudspeaker that provides uncompromised high fidelity reproduction of their favorite music, anytime, anywhere.

To make possible a high-quality high fidelity amplifier which may be conveniently carried and operated independently of conventional power sources, new design concepts are employed. The resulting instrument embodies several departures from conventional circuitry, and other design features that combine conventional components and circuitry in novel ways. By re-examining



Amplifier chassis, loudspeaker, and rechargeable battery of PMS-15 are housed in an attractive molded enclosure.

design and construction standards which are now standard in high fidelity equipment, all the features of the PMS-15 are incorporated in one instrument without sacrificing quality of reproduction and reliability of operation.

AMPLIFIER CHASSIS

In order to provide efficiency, distortion-free operation, and light weight, a circuit with several unusual features was developed for the PMS-15. The complete circuit of the amplifier is shown in Figure 1. Two independent outputs are provided. A 2N2926 silicon transistor in the first stage of each preamp assures low noise operation. The gain of each of the preamplifier sections is controlled by varying the feedback loop. Thus, distortion and noise are kept to a minimum when high level signals are present, but high gain is available when signal levels are low. The output of each of these preamplifier stages is mixed and fed into the tone control amplifier. Both bass cut and treble boost are achieved by RC networks in the emitter circuit, while bass boost and treble cut are achieved through similar networks in the input circuit. The use of a 2N2926 low-noise silicon transistor and emitter degeneration result in a minimum of distortion in this

of the original Theremin, while the Professional was the first standard transistorized Theremin. The Melodia Theremin Kit was introduced in 1961. This kit offers experimenters and musicians a high quality electronic musical instrument with simple but well-designed circuitry. Finally, the Troubador Theremin, a sophisticated version of the Melodia with tone color changes and A.C. power supply, was announced in 1962.

The publication of this issue of MoogMusic marks more in the growth of the R. A. Moog Co. than the mere passage of ten years of operation. During this past year, we have greatly expanded our research and production facilities, and are now embarked on a program of development of electronic instruments for the musician. The first results of this program are the PMS-15 amplifier and XP-2 experimenter's kit, which are fully described in this newsletter. The text discusses the many novel features of these kits — features that distinguish the PMS-15 and XP-2 from all other instruments or kits that are currently available.

As another result of this program, a complete line of experimental electronic music composition equipment has been announced. The basic concepts of this equipment were explained in a paper presented before the convention of the Audio Engineering Society in October of this year. Systems utilizing these concepts are now being constructed for installation in such well-known institutions as Columbia University, University of Illinois, and Peabody Conservatory.

Although the electronic music composition equipment which we currently offer is sophisticated and complex, the basic concepts which are a result of our development work can also be applied to the design of simple electronic musical instruments. We expect to announce the availability of at least one such instrument early in 1965.

In addition to an expanded program of new instrument development, our new facilities will allow us to offer two more important services. We are currently preparing demonstration and instruction recordings for the Theremin, and will prepare similar recordings for all other new musical instruments that we design. Also, we are in a position to give prompt, speedy service on all of your requests. No order is too large or too small. Requests for information receive the same prompt, courteous attention as do orders for material. Detailed answers to all of your questions are provided without charge. Thus our new facilities are designed *expressly* to serve all of the needs of electronic experimenters with creative ability and an interest in music.

Limited space in this issue of MoogMusic does not allow us to tell more about instruments now in develop-

ment. However, the next issue will be published in a few months. In this forthcoming issue, we will announce a new musical instrument and describe its operation in detail. We'll describe some interesting additions and modifications which MelodiaTheremin owners can make in their instruments. The latest developments in the exciting field of Electronic Music Composition will be shown. And, of course, any other information for which we receive requests will be published.

If this copy of MoogMusic is mailed to you, it is because you requested information on our products at one time or another. MoogMusic is written to supply you with information on our electronic musical equipment, and other information that will interest you. Your comments and suggestions will help us to send you more interesting and useful information. May I hear from you soon?

Sincerely,

Robert A. Moog
Robert A. Moog



This year, the R. A. Moog Co. begins its second decade of service to musicians, experimenters, and hobbyists. As a result of the first decade's accomplishments, the R. A. Moog Co. is now regarded as a leader in the field of electronic music instrumentation.

A new trademark has been created to graphically symbolize the concepts upon which R. A. Moog products and services are based. The musical note instantly evokes the feeling of music, while the surrounding circle, open at the top, creates a sense of unity and movement. The trademark is simple enough to be instantly recognizable, and tasteful enough to complement the appearance of the finest electronic musical equipment. As such, this trademark will now be used to identify all R. A. Moog products.

TROUBADOR THEREMIN IS FEATURED IN THE BOB BROWN SCIENCE CIRCUS.



Miss Barbara Black demonstrates the Troubador Theremin in the Bob Brown Science Circus.

Bob Brown conducts a most unusual—and educational—science show. His BOB BROWN SCIENCE CIRCUS travels to schools throughout southeastern United States, presenting startling and fascinating demonstrations that are designed to illustrate basic scientific principles. With his assistant, Miss Barbara Black, he demonstrates such phenomena as static electricity, combustion of gases, and the properties of sound and light. The Troubador Theremin is one of his experiments in sound. In conjunction with an audio amplifier, the Troubador is used to illustrate the effect of changing the frequency, amplitude, and waveform of the tone of a musical instrument.

In addition to conducting his science circus, Bob Brown authors syndicated newspaper columns and has written the well-known "Science-Circus" books. His address is 20 Vandalia Street, Asheville, N. C. 28806.

An important feature of the circuit is the number of protective devices. If the speaker terminals are shorted, the current drawn by the transistors will burn out the 3 ampere fuse. Even if the fuse were not present, the drive power available from the 2N2923 driver would not be enough to endanger the output transistors. In fact, if the circuit is wired properly to begin with, it is virtually impossible to damage the power output transistors through accidental shorting or overloading. In addition, a thermistor in the power amplifier stage automatically lowers the bias on the power transistors as the chassis temperature rises. The entire amplifier is protected from damage by excessive temperature by a thermal relay in series with the primary of the power transformer. This relay will open either when the chassis temperature exceeds 60°C (140°F) or when the power transformer primary current exceeds 0.5 amperes. Either one of these



The circuit configuration described above provides for high efficiency and low idling current, both of which are necessary for economical operation. High fidelity transistor amplifier circuits currently in vogue are designed primarily for operation from an AC power supply where efficiency and low idling current are of secondary importance. The circuit of the PMS-15 amplifier section provides for the low distortion and clean noise-free sound for which the best transistor amplifiers are noted, and at the same time provides high efficiency.

High fidelity loudspeaker enclosures have traditionally been made from heavy plywood in order to provide the stiffness necessary to effectively contain the pressure waves emanating from the back of the loudspeaker. In the PMS-15 enclosure, recent developments in the field

Light weight of the enclosure is highly desirable in a portable amplifier. In addition, a rugged surface which will retain an attractive appearance throughout the life of the cabinet is also required. A cabinet embodying these desirable features is used to house the components of the PMS-15. A cutaway drawing illustrating the construction is shown in Figure 2. The outer shell is vacuum-molded Royalite®, the same material used in the finest luggage. The brown color and grained texture gives the cabinet a warm, rich appearance. The interior of the shell is lined with a rigid polyurethane foam plastic, which is molded in place to provide maximum adhesion to the inner surface of the shell. The exposed surface of the foam liner is protected and stiffened with thin plywood. The loud-speaker mounting board bears against the edge of the foam lining, and is held in place by four special screws that are inserted from the back of the cabinet. The front of the assembled enclosure is completely free of visible fasteners, providing a neat, clean appearance. An aluminum extrusion on the edge of the outer shell frames the speaker board. A rugged, yet attractive, rattle-free handle mounted on top of the cabinet completes the effect of functional elegance.

The outer shell is designed to provide convenience in operation, in addition to attractiveness and convenience in carrying. All controls are accessible from the top of the cabinet, while input and power connectors are accessible from the back. The entire mechanism is mounted inside the cabinet, and the handle is placed so that the instrument is balanced for comfortable carrying.

LOUDSPEAKER

The loudspeaker is the most critical component of a high fidelity system. It is required to generate acoustic waves over a wide frequency range, to reproduce large amplitude waveforms without distortion, and to be free of resonances and other colorations. In addition to these requirements, a loudspeaker in a portable high fidelity system is required to be compact and efficient.

An extensive test program to choose the best available loudspeaker was undertaken when the design work on the PMS-15 was begun. Although they are capable of extremely accurate reproduction, acoustic suspension loudspeakers are heavy and inefficient. Therefore, they were eliminated from consideration. Of all the moderate-size, high efficiency loudspeakers tested, the James B. Lansing D-216 proved to be the most efficient, and capable of the lowest distortion in the reproduction of large amplitude signals. In addition, this loudspeaker is extremely compact, and devoid of unnecessary decoration which would add to its weight.

By using a high efficiency speaker which is also capable of faithful reproduction of large amplitude signals, it is possible for the PMS-15 to achieve results that are normally associated with larger music systems. The use of the James B. Lansing speaker contributes in no small way to the clean, smooth sound of the PMS-15.

BATTERY

Battery operated transistor amplifiers for public address application are now available. These are generally powered by an assembly of conventional flashlight batteries. The power and distortion requirements for speech amplification are generally not stringent, and non-rechargeable batteries last an acceptable length of time in this application. However, the accurate reproduction of music involves much higher average power levels than the amplification of speech. As a result, conventional non-rechargeable batteries are inconvenient and uneconomical for use in powering high fidelity amplifiers.

Although the initial cost of rechargeable batteries is high, life expectancy is several years and they are much more economical and convenient than non-rechargeable batteries. The rechargeable battery assembly used in the

PMS-15 consists of two PEP (Packaged Electronic Power) batteries, each with a rated capacity of six ampere-hours. A battery of this capacity is able to power the PMS-15 from 10 to 40 hours of continuous operation, depending upon the volume level at which the amplifier is operated, and upon the type of program material that is being amplified.

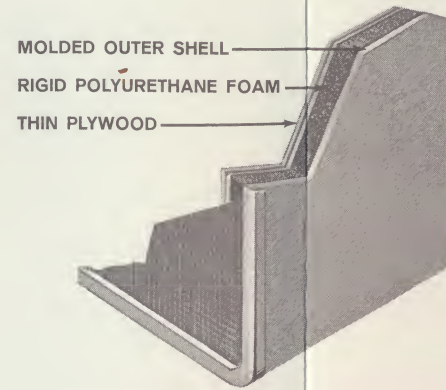


FIGURE 2: Cross-section of the PMS-15 enclosure.

The PEP batteries are leak-proof, explosion proof, and non-breakable. They are not damaged by over-discharge, heavy loading, or high ambient temperatures. Their low internal resistance and large power reserve enables them to energize the amplifier under peak signal conditions, with power to spare. Normal life of the battery assembly is about 150-200 discharge cycles, or an average of 5000 hours of operation!

The charging circuit which is an integral part of the PMS-15 amplifier circuit charges the PEP batteries in less than twelve hours. An ingenious recharging lamp indicates the state of charge of the battery. This light becomes dimmer as the battery charges, and goes out when the battery is fully charged. Once charged, the battery will retain its charge for months of non-use, ready at any time to supply power for ultra-convenient high fidelity sound.

The PMS-15 is offered with or without rechargeable battery, either in kit form or factory assembled and tested. (The rechargeable battery may be added at any time.) The kit includes all components, and a profusely illustrated, step-by-step assembly manual. No special tools or test instruments are required.

In addition, an "experimenter's kit," based on the PMS-15 circuit, is also available. This kit (the XP-2)

contains all the components of the PMS-15 kit, except enclosure, chassis, panel, and circuit boards. Instead of a step-by-step assembly manual, the XP-2 kit is furnished with a complete discussion of the circuit, and numerous suggestions for designing the chassis layout and enclosure. Useful circuit modifications and additions are also described. This new kit is designed specifically for advanced experimenters, Science Fair contestants, and others who enjoy designing and fabricating electronic instruments.

LETTER FROM THE EDITOR



Robert Moog adjusts the controls of a new electronic music composition system designed and built by the R. A. Moog Co.

This issue of MoogMusic marks the completion of a decade of progress of the R. A. Moog Co. in designing and manufacturing electronic instruments and kits for the musician. Beginning in 1954 with a modern adaptation of Leon Theremin's design for the musical instrument which bears his name, the R. A. Moog Co. has developed several original designs for new musical instruments and several improvements in Theremin design. In 1957, the Vanguard and Professional Theremins were announced. The Vanguard was the first completely self-contained instrument to embody all of the essential playing features